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IN THE CLAIMS:

1. (currently amended) A bi-directional cross-connect apparatus comprising:

- a first port;
- a second port;
- a third port;
- a fourth port; and

routing means for directing signals comprising wavelength channels from a first subset of optical frequencies between the first port and the third port, and between the second port and the fourth port, and for directing signals comprising wavelength channels from a second set of optical frequencies, interleaved with the first subset of optical frequencies, between the first port and the fourth port, and between the second port and the third port;

~~wherein the routing means includes an optical channel interleaver~~

wherein the routing means comprises a birefringent crystal interleaver including a first birefringent element of length L, and a second birefringent element of length 2L, wherein crystal axes of the first and second birefringent elements are oriented differently; whereby the polarization of the wavelength channels in the first subset of optical frequencies is rotated by substantially 90°, while the polarization of the wavelength channels in the second subset of optical frequencies is substantially unchanged.

2. (original) The apparatus according to claim 1, further comprising an optical device coupled between the third port and the fourth port, wherein the optical device is selected from the group consisting of a channel equalizer, an optical amplifier, an erbium doped fiber amplifier, and an Add/Drop multiplexer.